CLAIMS

What is claimed is:

1.　A method for managing a memory system having a plurality of subsystems,
comprising the steps of:
upon accessing the memory system for a piece of data used by a first
process
determining the access time to acquire the piece of data in the
memory system;
comparing the determined access time to a threshold; and
taking actions based on the results of the comparing step.

2.　The method of claim 1 further comprising the step of postponing executing the
first process and allowing executing a second process, if the step of comparing
indicates that the determined access time is close to, equal to, or greater than the
threshold.

3.　The method of claim 2 wherein an intelligence performing the steps of postponing
and allowing upon a latency manager notifying the intelligence that the determined
access time is close to, equal to, or greater than the threshold; the latency manger
performing the step of determining independent from the intelligence.

4.　The method of claim 3 wherein the intelligence is selected from a group consisting
of a processor working with the memory system, an operating system working
with the memory system, software running on the processor, and a memory
manager managing the memory system.

1   5.   The method of claim 1, if the step of comparing indicates that the determined

2   access time is close to, equal to, or greater than the threshold, further comprising

3   the step of monitoring the memory system or a system using the memory system.

1   6.   The method of claim 1 wherein the determined access time is selected as the

2   longest access time of a plurality of access times each of which corresponds to a

3   memory access in a multiple memory access.

1   7.   The method of claim 1 further comprising the step of accessing the piece of data in

2   more than one subsystem at the same time; one subsystem having a shorter access

3   time and one subsystem having a longer access time; the determined access time

4   being that of the subsystem having the shorter access time, and, if the piece of data

5   is missed in the subsystem having the shorter access time, then the determined

6   access time being that of the subsystem having the longer access time.

1   8.   The method of claim 1 further comprising the step of updating a previous

2   determined access time to the determined access time if the determined access

3   time is greater than the previous determined access time.

1   9.   The method of claim 1 further comprising the step of notifying an intelligence

2   working with the memory system; the intelligence being selected from a group

3   consisting of a processor, an operating system, software running on the processor,

4   and a memory manager managing the memory system; the intelligence performing

5   the step of taking actions.

1   10.   The method of claim 1 further comprising the step of changing the determined

2   access time upon performing a task selected from a group consisting of changing

3   the threshold, initiating an interrupt to an intelligence working with the memory

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4   system, and postponing executing the first process and allowing executing a
5   second process.

1   11.   The method of claim 1 wherein the determined access time is selected from the
2   time to access at least one subsystem.

1   12.   The method of claim 1 wherein a latency manager performing the step of
2   determining; the latency manager being on the data path between a processor
3   working with the memory system and the plurality of subsystems.

1   13.   The method of claim 1 wherein the data is accessed from a subsystem having a
2   shorter access time to a subsystem having a longer access time or in a non-
3   sequential order.

1   14.   A method for managing a memory system having a plurality of subsystems,
2   comprising the steps of:
3   earmarking a subsystem;
4   from the plurality of subsystems, determining an order for data to be
5   accessed from a subsystem having a shorter access time to a
6   subsystem having a longer access time; and
7   upon accessing the memory system for a piece of data used by a first
8   process, if the data is missed in the earmarked subsystem, then
9   postponing executing the first process and allowing executing a
10   second process.

1   15.   The method of claim 14 wherein an intelligence performing the steps of
2   postponing and allowing upon a latency manager notifying the intelligence that the
3   determined access time is close to, equal to, or greater than the threshold; the

4   intelligence being selected from a group consisting of a processor working with

5   the memory system, an operating system working with the memory system,

6   software running on the processor, a memory manager managing the memory

7   system; the latency manger being part of managing the memory system.

1 16.   An apparatus for managing a memory system having a plurality of subsystems,

2   comprising:

3   means for, upon accessing the memory system for a piece of data used by a

4   first process,

5   determining the access time to acquire the piece of data in the

6   memory system;

7   comparing the determined access time to a threshold; and

8   taking actions based on the results of the comparing step.

1 17.   The apparatus of claim 16 further comprising means for postponing executing the

2   first process and allowing executing a second process, if the step of comparing

3   indicates that the determined access time is close to, equal to, or greater than the

4   threshold.

1 18.   The apparatus of claim 16 wherein the determined access time is selected as the

2   longest access time of a plurality of access times each of which corresponds to a

3   memory access in a multiple memory access.

1 19.   The apparatus of claim 16 further comprising means for accessing the piece of data

2   in more than one subsystem at the same time; one subsystem having a shorter

3   access time and one subsystem having a longer access time; the determined access

4   time being that of the subsystem having the shorter access time, and, if the piece of

5   data is missed in the subsystem having the shorter access time, then the determined

6   access time being that of the subsystem having the longer access time.

1   20.   An apparatus for managing a memory system having a plurality of subsystems,

2   comprising:

3   means for earmarking a subsystem;

4   means for determining, from the plurality of subsystems, an order for data

5   to be accessed from a subsystem having a shorter access time to a

6   subsystem having a longer access time; and

7   upon accessing the memory system for a piece of data used by a first

8   process, if the data is missed in the earmarked subsystem, then

9   means for postponing executing the first process and allowing

10   executing a second process.

1   21.   A computer-readable medium embodying instructions for a computer to perform a

2   method for managing a memory system having a plurality of subsystems, the

3   method comprising the steps of:

4   upon accessing the memory system for a piece of data used by a first

5   process,

6   determining the access time to acquire the piece of data in the

7   memory system;

8   comparing the determined access time to a threshold; and

9   taking actions based on the results of the comparing step.

1   22.   The computer-readable medium of claim 21 wherein the method further comprises

2   the step of postponing executing the first process and allowing executing a second

3   process, if the step of comparing indicates that the determined access time is close

4   to, equal to, or greater the threshold.

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1 23. The computer-readable medium of claim 21 wherein the determined access time is
2   selected as the longest access time of a plurality of access times each of which
3   corresponds to a memory access in a multiple memory access.

1 24. The computer-readable medium of claim 21 wherein the method further
2   comprising the step of accessing the piece of data in more than one subsystem at
3   the same time; one subsystem having a shorter access time and one subsystem
4   having a longer access time; the determined access time being that of the
5   subsystem having the shorter access time, and, if the piece of data is missed in the
6   subsystem having the shorter access time, then the determined access time being
7   that of the subsystem having the longer access time.

1 25. A computer-readable medium embodying instructions for a computer to perform a
2   method for managing a memory system having a plurality of subsystems, the
3   method comprising the steps of:
4   earmarking a subsystem;
5   from the plurality of subsystems, determining an order for data to be
6   accessed from a subsystem having a shorter access time to a
7   subsystem having a longer access time; and
8   upon accessing the memory system for a piece of data used by a first
9   process, if the data is missed in the earmarked subsystem, then
10   postponing executing the first process and allowing executing a
11   second process.

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